## AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph on page 9, lines 8-11, with the following paragraph:

Figure 3. The aligned amino acid sequence of the LjNFR5 and PsSYM10 proteins. Amino acid residues sharing identity are highlighted. The Medicago truncatula (Ac126779) showing 76 % amino acid identyidentity to Lotus NFR5 is included to exemplify a substantial identical protein sequence.

Please replace the third paragraph on page 17, lines 20-24:

Pfam consensus: a consensus sequence derived from a large collection of protein multiple sequence alignments and profile hidden Markov models used to identify conserved protein domains (Bateman et al., 2002, Nucleic Acids Res. 30: 276-80; and searchable on the internet at <a href="http://www.sanger.ac.uk/Software/Pfam[[/]]">http://www.sanger.ac.uk/Software/Pfam[[/]]</a> and on NCBI at <a href="http://www.ncbi.nlm.nih.gov/Structure/cdd/wrpsb.cgi">http://www.ncbi.nlm.nih.gov/Structure/cdd/wrpsb.cgi</a>.

with the following paragraph:

Pfam consensus: a consensus sequence derived from a large collection of protein multiple sequence alignments and profile hidden Markov models used to identify conserved protein domains (Bateman et al., 2002, Nucleic Acids Res. 30: 276-80; and searchable on the internet at sanger.ac.uk/Software/Pfam and on NCBI at ncbi.nlm.nih.gov/Structure/edd/wrpsb.cgi.

Please replace the fourth paragraph on page 17, lines 26-30:

Protein domain prediction: sequences are analyzed by BLAST (<u>www.</u> (ncbi.nlm.nih.gov/BLAST[[/]]) and PredictProtein (<u>www.</u> (emblheidelberg.de/predictprotein/predictprotein). Signal peptides are predicted by SignalP v. 1.1 (<u>www.</u> (cbs.dtu.dk/services/signal[[/]]) and transmembrane regions are predicted by TMHMM v. 2.0 (<u>www.</u> (cbs.dtu.dk/services/TMHMM[[/]]).

with the following paragraph:

Protein domain prediction: sequences are analyzed by BLAST (ncbi.nlm.nih.gov/BLAST) and PredictProtein (emblheidelberg.de/predictprotein/predictprotein). Signal peptides are predicted by SignalP v. 1.1 (cbs.dtu.dk/services/signalP) and transmembrane regions are predicted by TMHMM v. 2.0 (cbs.dtu.dk/services/TMHMM).

Please replace the paragraph on page 19, lines 19-31 through page 20, lines 1-4:

Substantially identical: refers to two nucleic acid or polypeptide sequences that have at least about 60%, preferably about 65%, more preferably about 70%, further more preferably about 80%, most preferably about 90 or about 95% nucleotide or amino acid residue identity when aligned for maximum correspondence over a comparison window as measured using one of the sequence comparison algorithms given herein, or by manual alignment and visual inspection. This definition also refers to the complement of the test sequence with respect to its substantial identity to a reference sequence. A comparison window refers to any one of the number of contiguous positions in a sequence (being anything from between about 20 to about 600, most commonly about 100 to about 150) which may be compared to a reference sequence of the same number of contiguous positions after the two sequences are optimally aligned. Optimal alignment can be achieved using computerized implementations of alignment algorithms (e.g., GAP, BESTFIT, FASTA, and TFASTA in the Wisconsin Genetics Software Package, Genetics Computer Group, 575 Science Dr., Madison, Wis. USA) or BLAST analyses available on the site: (www ncbi.nlm.nih.goy[[/]]].

with the following paragraph:

Substantially identical: refers to two nucleic acid or polypeptide sequences that have at least about 60%, preferably about 65%, more preferably about 70%, further more preferably about 80%, most preferably about 90 or about 95% nucleotide or amino acid residue identity when aligned for maximum correspondence over a comparison window as measured using one of the sequence comparison algorithms given herein, or by manual alignment and visual inspection. This definition also refers to the complement of the test sequence with respect to its substantial identity to a reference sequence. A comparison window refers to any one of the number of contiguous positions in a sequence (being anything from between about 20 to about 600, most commonly about 100 to about 150) which may be compared to a reference sequence of the same number of contiguous positions after the two sequences are optimally aligned. Optimal alignment can be achieved using computerized implementations of alignment algorithms (e.g., GAP, BESTFIT, FASTA, and TFASTA in the Wisconsin Genetics Software Package, Genetics Computer Group, 575 Science Dr., Madison, Wis. USA) or BLAST analyses available on the site: ncbi.nlm.nih.gov.

Please replace the paragraph on page 53, lines 17-22, with the following:

Molecular markers based on DNA polymorphism are used to detect the alleles in breeding populations. Similar use can be taken of the NFR1 sequences. Molecular DNA markers, based on the NFR5 allele sequence differences of Lotus and pea, are bolded in Table 12 and highlighted in Tables 12 and Table 13 as examples of how DNA polymorphism can be used directly to detect the presence of an advantageous allele in a breeding population.

Please replace Table 1 on page 55 with the following:

<u>Table 1</u>
Alignment of *Lotus*, *Glycine* and *Phaseolus* NFR5 protein sequences

Lotus Glycine Phaseolus	1 MAVFF MAVFFPFLPL MAVFFVSLTL	2 GSLSLFLALT HSQILCLVIM GAQILYVVLM	3 LLFTNIAARS LFSTNIVAQS FFTC-	4 EKISGPDFSC QQDNRTNFSC QQTNGTNFSC	50 PVDSPPSCET PSDSPPSCET PSNSPPSCET
Lotus Glycine Phaseolus	6 YVTYTAQSPN YVTYIAQSPN YVTYISQSPN	7 LLSLTNISD FLSLTNISN FLSLTSVSN	8 FDISPLSIA FDTSPLSIAR FDTSPLSIAR	9 ASNIDAGKDK ASNLEPMDDK ASNLQHEEDK	100 LVPGQVLLVP LVKDQVLLVP LIPGQVLLI
Lotus Glycine Phaseolus	11 VTCGCAGNHS VTCGCTGNRS VTCGCTGNRS	12 SANTSYQIQL FANISYEINQ FANISYEINQ	13 GDSYDFVATT GDSFYFVATT GDSFYFVATT	14 LYENLTNWNI SYENLTNWRA LYQNLTNWHA	150 VQASNPGVNP VMDLNPVLSP VMDLNPGLSQ
Lotus Glycine Phaseolus	16 YLLPERVKVV NKLPIGIQVV FTLPIGIQV	17 FPLFCRCPSK FPLFCKCPSK IPLFCKCPSK	18 NQLNKGIQYL NQLDKEIKYL NQLDRGIKYL	19 ITYVWKPNDN ITYVWKPGDN ITHVWQPNDN	200 VSLVSAKFGA VSLVSDKFGA VSFVSNKLGA
Lotus Glycine Phaseolus	21 SPADILTENR SPEDIMSENN SPQDILSENN	22 YGQDFTAATN YGQNFTAANN YGQNFTAASN	23 LPILIPVTQ LPVLIPVTR LPVLIPVTL	24 PELTQPSSNG PVLARSPSDG PDLIQSPSDG	250 RKSSIHLLV RKGGIRLPVI RKHRIGLPVI
Lotus Glycine Phaseolus	26 LGITLGCTL IGISLGCTL IGISLGCTL	27 TAVLTGTLVY VLVLAVLLVY VVVSAILLVC	28 VYCRRKKALN VYCLKMKTLN VCCLKMKSLN	29 RTASSAETAD RSASSAETAD RSASSAETAD	300 KLLSGVSGYV KLLSGVSGYV KLLSGVSGYV
Lotus Glycine Phaseolus	31 SKPNVYEIDE SKPTMYETDA SKPTMYETGA	32 IMEATKDFSD IMEATMNLSE ILEATMNLSE	33 ECKVGESVYK QCKIGESVYK QCKIGESVYK	34 ANIEGRVVAV ANIEGKVLAV ANIEGKVLAV	350 KKIKEGGANE KRFKED-VTE KRFKED-VTE
Lotus Glycine Phaseolus	36 ELKILQKVNH ELKILQKVNH	37 GNLVKLMGVS GNLVKLMGVS GNLVKLMGVS	38 SGYDGNCFLV SDNDGNCFVV SDNDGNCFVV	39 YEYAENGSLA YEYAENGSLD YEYAENGSLE	400 EWLFSKS EWLFSKSCSD EWLFAKSCSE
Lotus Glycine Phaseolus	41 -SGTPNSLTW TSNSRASLTW TSNSRTSLTW	42 SQRISIAVDV CQRISMAVDV CQRISIAVDV	43 AVGLQYMHEH AMGLQYMHEH SMGLQYMHEH	44 TYPRIIHRD AYPRIVHRDI AYPRIVHRDI	450 TTSNILLDSN TSSNILLDSN TSSNILLDSN
Lotus Glycine Phaseolus	46 FKAKIANFAM FKAKIANFSM FKAKIANFSM	47 ARTSTNPMMP ARTFTNPMMP ARTFTNPMMS	48 KIDVFAFGVL KIDVFAFGVV KIDVFAFGVV	49 LIELLTGRKA LIELLTGRKA LIELLTGRKA	500 MTTKENGEVV MTTKENGEVV MTTKENGEVV

Lotus Glycine Phaseolus	51 MLWKDMWEIF MLWKDIWKIF MLWKDIWKIF	52 DIEENREERI DQEENREERL DQEENREERL	53 RKWMDPNLES KKWMDPKLES RKWMDPKLDN	54 FYHIDNALSL YYPIDYALSL YYPIDYALSL	550 ASLAVNCTAD ASLAVNCTAD ASLAVNCTAD
Lotus Glycine Phaseolus	56 KSLSRPSMAE KSLSRPTIAE KSLSRPTIAE	57 IVLSLSFLT IVLSLSLLT IVLSLSLLT	58 QSSNPTLERS PSP-ATLERS PSP-ATLERS	59 LTSSGLDVED LTSSGLDVEA LTSSGLDVEA	600 DAHIVTSIT -
Lotus Glycine Phaseolus	R R R	62	63	65	650 SEQ ID NO: 8 SEQ ID NO: 48 SEQ ID NO: 40

Please replace Table 3 on page 57 with the following:

Table 3

## Alignment of Lotus and Pisum NFR1 protein sequences

	1	2	3	4	50
Pisum	MKLKNGLLLF	F-	KVESKCVIGC	DIALASYYVM	P-
Pisum	MKLKNGLLLF	F-	KVDSKCVKGC	DLALASYYVM	P-
Lotus	MKLKTGLLLF	FILLLGHVC	HVESNCLKGC	DLALASYYI	PGVFILQNI
	6	7	8	9	100
Pisum	TFMQSKLVTN	SFEVIVRYNR	DIVFSNDNLF	SYFRVNIPFP	CECIGGEFLG
Pisum	NYMQSKIVTN	SSDVLNSYNK	VLVTNHGNIF	SYFRINIPF	CECIGGEFLG
Lotus	TFMQSEIVSS	N-	DKILNDINI	SFQRLNIPFP	CDCIGGEFLG
	11	12	13	1.4	150
Pisum	HVFEYTANEG	DTYDLIANTY	YASLTTVEVL	KKYNSYDPNH	IPVKAKVNVT
Pisum	HVFEYTTKKG	DTYDLIANTY	YVSLTSVELL	KKFNSYDPNH	IPAKAKVNVT
Lotus	HVFEYSASKG	DTYETIANN	YANLTTVDLL	KRFNSYDPKN	IPVNAKVNVT
Lotus	HVFEISASKG	DITETIANL	TANLTTVDLL	KKFNSIDPKN	IPVNAKVNVI
	16	17	18	19	200
Pisum	VNCSCGNSOI	SKDYGLFITY	PLRPRDTLEK	IARHSNLDEG	VIOSYNLGVN
Pisum	VNCSCGNSOI	SKDYGLFVTY	PLRSTDSLEK	IANESKLDEG	LIQNFNPDVN
Lotus	VNCSCGNSQV	SKDYGLFITY	PIRPGDTLQD	IANQSSLDAG	LIQSFNPSVN
	21	22	23	24	250
Pisum	FSKGSGVVFF	PGRDKNGEYV	PLYPRT-GLG	KGAAAGISI	GIFALLLF
Pisum	FSRGSGIVF	PGRDKNGEYV	PLYPKT-GVG	KGVAIGISI	GVFAVLLFV
Lotus	FSKDSGIAF	PGRYKNGVYV	PLYHRTAGLA	SGAAVGISI	GTFVLLLLA
	26	27	28	29	300
Pisum	CIYIKYFOK	EEEKTKLP-O	VSTALSAOD-	-ASGSGEYET	SGSSGHGTGS
Pisum	CIYVKYFOKK	EEEKTILP-	VSKALSTODG	NASSSGEYET	SGSSGHGTGS
Lotus	CMYVRY-OKK	EEEKAKLPTD	ISMALSTOD	-ASSSAEYET	SGSSGPGTAS
LULUS	CHIVKI-QKK	DEDNAMBEID	TOURDIQU	-MOSSAETET	adaadPG1A5
	31	32	33	34	350
Pisum	TAGLTGIMVA	KSTEFSYQEL	AKATNNFSLD	NKIGQGGFGA	VYYAVLRGEK

Pisum Lotus	AAGLTGIMVA ATGLTSIMVA	KSTEFSYQEL KSMEFSYQEL	AKATDNFSLD AKATNNFSLD	NKIGQGGFGA NKIGQGGFGA	VYYAELRGEK VYYAELRGKK
Pisum Pisum Lotus	36 TAIKKMDVQA TAIKKMNVQA TAIKKMDVQA	37 STEFLCELQV SSEFLCELKV STEFLCELKV	38 LTHVHHLNLV LTHVHHLNLV LTHVHHLNLV	39 RLIGYCVEGS RLIGYCVEGS RLIGYCVEGS	400 LFLVYEHID LFLVYEHID LFLVYEHID
Pisum Pisum Lotus	41 GNLGQYLHGI GNLGQYLHGK GNLGQYLHGS	42 DKAPLPWSSR DKEPLPWSSR GKEPLPWSSR	43 VQIALDSARG VQIALDSARG VQIALDAARG	44 LEYIHEHTVP LEYIHEHTVP LEYIHEHTVP	450 VYIHRDVKSA VYIHRDVKSA VYIHRDVKSA
Pisum Pisum Lotus	46 NILIDKNLH NILIDKNLR NILIDKNLR	47 KVADFGLTKL KVADFGLTKL KVADFGLTKL	48 IEVGNSTLHT IEVGNSTLHT IEVGNSTLQT	49 RLVGTFGYMP RLVGTFGYMP RLVGTFGYMP	500 PEYAQYGDVS PEYAQYGDVS PEYAQYGDIS
Pisum Pisum Lotus	51 PKIDVYAFGV PKIDVYAFGV PKIDVYAFGV	52 VLYELISAK VLYELISAK VLFELISAK	53 AILKTGESAV AVLKTGEESV AVLKTGE-	54 - AESKGLVALF AESKGLVALF	550 EEALNQIDPL EKALNQIDPS EEALNKSDPC
Pisum Pisum Lotus	56 EALRKLVDPR EALRKLVDPR DALRKLVDPR	57 LKENYPIDSV LKENYPIDSV LGENYPIDSV	58 LKMAQLGRAC LKMAQLGRAC LKIAQLGRAC	59 TRDNPLLRPS TRDNPLLRPS TRDNPLLRPS	600 MRSLVVALMT MRSLVVDLMT MRSLVVALMT
Pisum Pisum Lotus	61 LLSHTDD LSSPFEDCDD LSSLTEDCDD	62 DTFYENQSLT DTSYENQTLI ESSYESQTLI	63 NLLSVR NLLSVR	SEQ I	650 D NO: 52 D NO: 54 D NO: 24

Please replace Table 12 on page 65 with the following:

## Table 12

## Nucleotide sequence variation between the pea SYM10 alleles of pea cultivars Frisson and Finale\*

Frisson	CTTGCATTTC	TTCACAATTT	CACAACAATG	GCTATCTTCT	TTCTTCCTTC
Finale	CTTGCATTTC	TTCACAATTT	CACAACA <u>ATG</u>	GCTATCTTCT	TTCTTCCTTC
Frisson	TAGTTCTCAT	GCCCTTTTC	TTGCACTCAT	GTTTTTTGTC	ACTAATATTT
Finale	TAGTTCTCAT	GCCCTTTTC	TTGCACTCAT	GTTTTTTGTC	ACTAATATTT
Frisson	CAGCTCAACC	ATTACAACTC	AGTGGAACAA	ACTTTTCATG	CCCGGTGGAT
Finale	CAGCTCAACC	ATTACAACTC	AGTGGAACAA	ACTTTTCATG	
Frisson	TCACCTCCTT	CATGTGAAAC	CTATGTGACA	TACTTTGCTC	GGTCTCCAAA
Finale	TCACCTCCTT	CATGTGAAAC	CTATGTGACA	TACTTTGCTC	GGTCTCCAAA
Frisson	CTTTTTGAGC	CTAACTAACA	TATCAGATAT	ATTTGATATG	AGTCCTTTAT
Finale	CTTTTTGAGC	CTAACTAACA	TATCAGATAT	ATTTGATATG	AGTCCTTTAT
Frisson	CCATTGCAAA	AGCCAGTAAC	ATAGAAGATG	AGGACAAGAA	GCTGGTTGAA
Finale	CCATTGCAAA	AGCCAGTAAC	ATAGAAGATG	AGGACAAGAA	GCTGGTTGAA
Frisson	GGCCAAGTCT	TACTCATACC	TGTAACTTGT	GGTTGCACTA	GAAATCGCTA
Finale	GGCCAAGTCT	TACTCATACC	TGTAACTTGT	GGTTGCACTA	GAAATCGCTA
Frisson	TTTCGCGAAT		CAATCAAGCT	AGGTGACAAC	TATTTCATAG
Finale	TTTCGCGAAT		CAATCAAGCT	AGGTGACAAC	TATTTCATAG
Frisson	TTTCAACCAC		AATCTTACAA	ATTATGTGGA	AATGGAAAAT
Finale	TTTCAACCAC		AATCTTACAA	ATTATGTGGA	AATGGAAAAT
Frisson	TTCAACCCTA	ATCTAAGTCC	AAATCTATTG	CCACCAGAAA	TCAAAGTTGT
Finale	TTCAACCCTA	ATCTAAGTCC	AAATCTATTG	CCACCAGAAA	TCAAAGTTGT
Frisson	TGTCCCTTTA	TTCTGCAAAT	GCCCCTCGAA	GAATCAGTTG	AGCAAAGGAA
Finale	TGTCCCTTTA	TTCTGCAAAT	GCCCCTCGAA	GAATCAGTTG	AGCAAAGGAA
Frisson	TAAAGCATCT	GATTACTTAT	GTGTGGCAGG	CTAATGACAA	TGTTACCCGT
Finale	TAAAGCATCT	GATTACTTAT	GTGTGGCAGG	CTAATGACAA	TGTTACCCGT
Frisson	GTAAGTTCCA		ATCACAAGTG	GATATGTTTA	CTGAAAACAA
Finale	GTAAGTTCCA		ATCACAAGTG	GATATGTTTA	CTGAAAACAA
Frisson	TCAAAACTTC	ACTGCTTCAA	CCAA <b>C</b> GTTCC	GATTTTGATC	CCTGTGACAA
Finale	TCAAAACTTC	ACTGCTTCAA	CCAA <b>T</b> GTTCC	GATTTTGATC	CCTGTGACAA

Frisson Finale			CCATCTTCAA CCATCTTCAA		
Frisson Finale	CAAAAACCTG CAAAAACCTG			CTAGGATGTG CTAGGATGTG	
Frisson Finale		ACACTATCAC ACACTATCAC		ATATTGTCTG ATATTGTCTG	
Frisson Finale	0111110	0	TTGGCGGAGA TTGGCGGAGA	0 - 0 0 0 0 1 1 1 1 1 1	
Frisson Finale			CAAGCCAACA CAAGCCAACA		TGGATGCGAT TGGATGCGAT
Frisson Finale		ACAATGAACC ACAATGAACC	TGAGTGAGAA TGAGTGAGAA		GGTGAATC <b>C</b> G GGTGAATC <b>T</b> G
Frisson Finale	TTTACAAGGC TTTACAAGGC	TAATATAGAT TAATATAGAT	GGTAGAGTTT GGTAGAGTTT	TAGCAGTGAA TAGCAGTGAA	
Frisson Finale		CTGAGGAGCT CTGAGGAGCT		CAGAAGGTAA CAGAAGGTAA	
Frisson Finale		CTTATGGGTG CTTATGGGTG		CAACGA <b>C</b> GGA CAACGA <b>A</b> GGA	
Frisson Finale		GTATGCTGAA GTATGCTGAA		TTGATGAGTG TTGATGAGTG	
Frisson Finale		AAACTTCGAA AAACTTCGAA		TCGCTTACAT TCGCTTACAT	GGTCTCAGAG GGTCTCAGAG
Frisson Finale			TTGCAGTTGG TTGCAGTTGG		ATGCATGAAC ATGCATGAAC
Frisson Finale			CACAGAGACA CACAGAGACA		TAATATCCTT TAATATCCTT
Frisson Finale			CAAGATAGCG CAAGATAGCG		TGGCCAGAAC TGGCCAGAAC
Frisson Finale	TTCAACAAAT TTCAACAAAT	TCCATGATGC TCCATGATGC	CGAAAATCGA CGAAAATCGA	TGTTTTCGCT TGTTTTCGCT	TTTGGGGTGG TTTGGGGTGG
Frisson Finale			GGCAAGAAAG GGCAAGAAAG		GATGGAAAAT GATGGAAAAT
Frisson Finale	GGCGAGGTGG GGCGAGGTGG	TTATTCTGTG TTATTCTGTG	GAAGGATTTC GAAGGATTTC	TGGAAGATTT TGGAAGATTT	TTGATCTAGA TTGATCTAGA

Frisson	AGGGAATAGA	GAAGAGAGCT	TAAGAAAATG	GATGGATCCT	AAGCTAGAGA
Finale	AGGGAATAGA	GAAGAGAGCT	TAAGAAAATG	GATGGATCCT	AAGCTAGAGA
Frisson	ATTTTTATCC	TATTGATAAT	GCTCTTAGTT	TGGCTTCTTT	GGCAGTGAAT
Finale	ATTTTTATCC	TATTGATAAT	GCTCTTAGTT	TGGCTTCTTT	GGCAGTGAAT
Frisson	TGTACTGCAG	ATAAATCATT	GTCAAGACCA	AGCATTGCAG	AAATTGTTCT
Finale	TGTACTGCAG	ATAAATCATT	GTCAAGACCA	AGCATTGCAG	AAATTGTTCT
Frisson	TTGTCTTTCT	CTTCTCAATC	AATCATCATC	TGAACCAATG	TTAGAAAGAT
Finale	TTGTCTTTCT	CTTCTCAATC	AATCATCATC	TGAACCAATG	TTAGAAAGAT
Frisson	CCTTGACATC	TGGTTTAGAT	GTTGAAGCTA	CTCATGTTGT	TACTTCTATA
Finale	CCTTGACATC	TGGTTTAGAT	GTTGAAGCTA	CTCATGTTGT	TACTTCTATA
Frisson	GTAGCTCGTT	GATATTCATT	CAAGTGAAGG	TAACACT <b>G</b> AA	TCAATGCTTC
Finale	GTAGCTCGTT	GATATTCATT	CAAGTGAAGG	TAACACT <b>A</b> AA	TCAATGCTTC
Frisson	AGTTTCTTAT	ATTCAAGATG	GTTACTTTGT	TTAG <b>A</b> TGATT	ATTGATTACA
Finale	AGTTTCTTAT	ATTCAAGATG	GTTACTTTGT	TTAG <b>G</b> TGATT	ATTGATTACA
Frisson	TCTTTATGTG	TGGAACTATA	TGGTTATTTT	AATTAAGGGA	ATT <b>G</b> TTCTAA
Finale	TCTTTATGTG	TGGAACTATA	TGGTTATTTT	AATTAAGGGA	ATT <b>A</b> GTCTAA
Frisson	A <b>A</b> TTCATTTT	TCCATGTT	SEQ ID NO:	13	
Finale	A <b>T</b> TTCATTTT	TCCATGTT	SEQ ID NO:	12	

<sup>\*</sup> Nucleotide differences are bolded and the coding region is underlined